Docket No. 55908 (46322)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	J. Schofield et al.	EXAMINER: Maria Marvich
SERIAL NO.	09/868,879	ART UNIT: 1636
FILED:	June 22, 2001	
ENTITLED:	GLYCOSYL PHOSPHATIDYL INOSITOL SPECIFIC PHOSPHOLIPASE D PROTEINS AND USES THEREOF	

COMMISSIONER FOR PATENTS
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ALEXANDRIA, VA 22313-1450

DECLARATION OF THOMAS RADEMACHER UNDER 37 C.F.R. §1.132

SIRS:

1. I, **THOMAS RADEMACHER** declare and say that I am a resident of Great Britain. My residence address is Foxcombe, The Ridgeway, Boar's Hill, Oxford, OX2 5EY, United Kingdom.

2. I am a Professor of Molecular Medicine in the Department of Immunology and Molecular Pathology, Division of Infectious Disease, University College of London (England) School of Medicine. I have special experience and knowledge in the field of enzymology, particularly the relationship of certain enzymes and disease. My Curriculum Vitae is attached as **Appendix C**. It shows, among other things, that I have published more than one hundred and sixty nine (169) research papers. It further shows my expertise and experience in the fields of enzymology, human disease and related areas.

3. I am co-inventor of claims 1-45 of the above-identified patent application (subject application). I understand that claims 46-67 will be pending following submission of the

attached response, which I have reviewed. I personally performed and/or assisted in research leading to the claimed invention.

4. I have read the Office Action dated July 2, 2004 for the subject application ("Office Action"). I understand from that Office Action that the USPTO rejected claims 4, 7-10, 13-14, and 17-20 on grounds that they contain subject matter that was not described in my specification in such as a way as to enable one skilled in the field to make and use the claimed invention.

5. I am familiar with the disclosures of Torchilin and Lukyanov (DDT Vol. 8 (6): 259-266 "Torchilin"), and Meng and Deiry (*Gene Therapy of Cancer*, 1999, pg. 6, col. 1, "Meng") as cited by the USPTO at pgs. 8-9 of the Office Action.

6. However, I must respectfully disagree that the Torchilin and Meng references as relied on support the Office position that the invention of claims 4, 7-10, 13-14, and 17-20 is in an unpredictable field.

7. For example, Torchilin as relied on by the USPTO certainly does not exclude use of the glycosyl phosphatidyl inositol specific phospholipase D (GPI-PLD) enzyme in the claimed methods. Indeed, and as I understand the reference, it reports on the successful use of certain peptides and antibodies as promising therapeutics.

8. As I understand the Meng reference cited by the USPTO, it shows results from animal studies in which a virus (eg., adenovirus) was used to deliver an anti-cancer therapeutic. That information is not related at all to the claimed invention which involves, among other things, administering GPI-PLD to treat other indications such as diabetes. Meng certainly does not exclude use of the GPI-PLD enzyme according to the claimed methods.

9. Thus, as I understand the Torchilin and Meng references as relied on by the USPTO in the Office Action, they do not support the position set forth in the Office Action that the claimed invention is in an unpredictable field.

10. I must also disagree with the USPTO that the invention of claims 4, 7-10, 13-14, and 17-20 is not enabled by my patent specification. Indeed, it is my belief that the specification shows how to make and use the claimed invention.

11. For instance, I am familiar with unpublished research that was performed by me and my co-inventor. That work was conducted along lines of my patent specification and it showed, among other things, that administration of GPI-PLD lowered plasma insulin and raised blood glucose in hyperinsulinaemic and insulin-resistant mice (db/db and ob/ob genotype). These mice are recognized models of human disease, particularly diabetes and complications thereof. Importantly, the reduction in plasma insulin and increase in blood glucose levels seen in the mice are highly significant and indicative of a useful therapeutic. More particularly, the results are consistent with a new protocol for the treatment of hypoglycaemia including indications associated with diffuse hyperinsulinism and insulinomas.

12. Additionally, and in accord with the specification, a worker can administer the GPI-PLD enzyme to an animal in need of treatment in a variety of ways. These administration routes include, but are not limited to, injection routes. See the section entitled "Pharmaceutical Compositions" pg. 20, line 33 to pg. 24, line 20. In particular, the enzyme can be administered isotonically using saline injection. See pg. 23, lines 30-33.

13. As the specification makes clear, the specific amount of the GPI-PLD enzyme to be administered will depend on parameters understood and accepted by workers in the field. These parameters include the nature and severity of the indication and the administration route selected. See pg. 24, lines 1-20. The severity of diabetes and related complications, for instance, are

known to vary among individual patients. A worker reading my patent specification would understand and appreciate these variables. With this knowledge in hand, they would certainly know how to administer the GPI-PLD enzyme to treat disease indications mentioned in my patent specification after reading it.

14. **Administration of GPI-PLD Enzyme Decreased Plasma Insulin in ob/ob Mice**

I obtained female ob/ob mice C_{57}BL/6J obese (Lep^{ob}/Lep^{ob}) from Harlan Olac Ltd (Bicester, UK) and subjected them to a standard fasting regimen starting 60 minutes prior to the administration of GPI-PLD. Human serum GPI-PLD partially purified by the method of Rhode et al 2000 (Biol. Chem. 381, 471-485) and formulated along lines of my patent specification as an aqueous solution in 0.05 % Triton X-100 at a concentration of 1900 U/ml. The GPI-PLD enzyme was administered to the fasting ob/ob mice about 2 hours before intraperitoneal (i.p.) injection of 2 g of glucose/kg body weight (GTT or glucose tolerance test). Insulin levels were measured in plasma using a mouse insulin ELISA kit from MERCODIA AB, Sylveniusgatan 8A ,S-754 50 Uppsala, Sweden. The graph provided in **Appendix A** shows, among other things, that administration of GLP-PLD substantially reduced plasma insulin in the mice. In the graph, data were normalized on the 0 h values and are the mean ± SD of 8 observations. The symbol " * " indicates statistically significant differences. Insulin p=0.0224 at 1h and 0.0472 at 3h.

15. **Administration of GPI-PLD Enzyme Increased Blood Glucose in ob/ob Mice**

I obtained female ob/ob mice C_{57}BL/6J obese (Lep^{ob}/Lep^{ob}) from Harlan Olac Ltd (Bicester, UK) and subjected them to a standard fasting regimen starting 60 minutes prior to the administration of GPI-PLD.. The GPI-PLD enzyme was obtained and formulated (as described previously) at a concentration of 1900 U/ml. The GPI-PLD enzyme was administered to the fasting mice about 1 hour before intraperitoneal (i.p.) injection of 2 g of glucose/kg body weight (GTT). Blood glucose levels were measured using an Espirit™ glucometer according to

procedures provided by the manufacturer. The graph provided by **Appendix B,** shows, among other things, that administration of GPI-PLD substantially increased blood glucose in the rats. Data in the graph were normalized on the 0 h values and are the mean ± SD of 8 observations. The symbol " * " indicates statistically significant differences. Glucose $p>0.05$ at 1h and $p = 0.0144$ at 3h.

16. The data provided by **Appendices A and B** show, among other things, that the information found throughout my patent specification can be used to treat indications characterized by reduced levels of GPI-PLD such diabetes and complications thereof, liver dysfunction, and disorders involving pancreatectomies. This information is consistent with my patent specification that shows, among other things, how to use GPI-PLD enzyme to treat conditions characterized by reduced levels of the enzyme or which respond positively to that enzyme. For instance, the section under "Summary of the Invention", pg. 20, line 33 to pg. 24, line 20; pg. 23, lines 30-33; and pg. 24, lines 1-20.

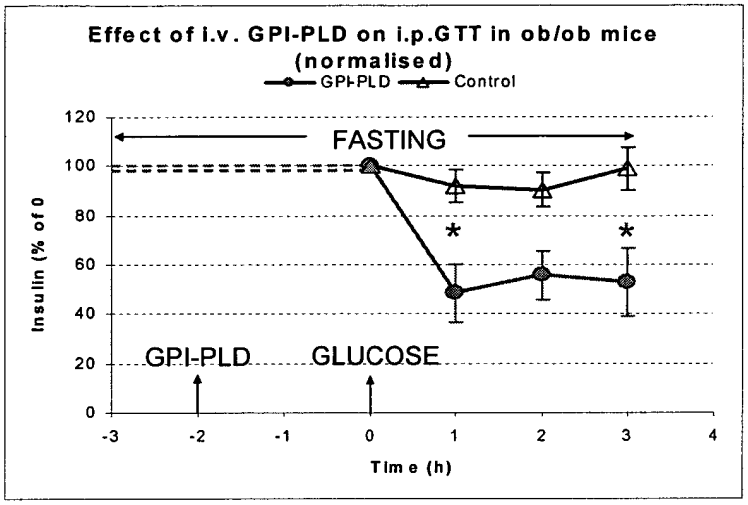
17. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title XVIII of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

_____ _____

Date Thomas Rademacher

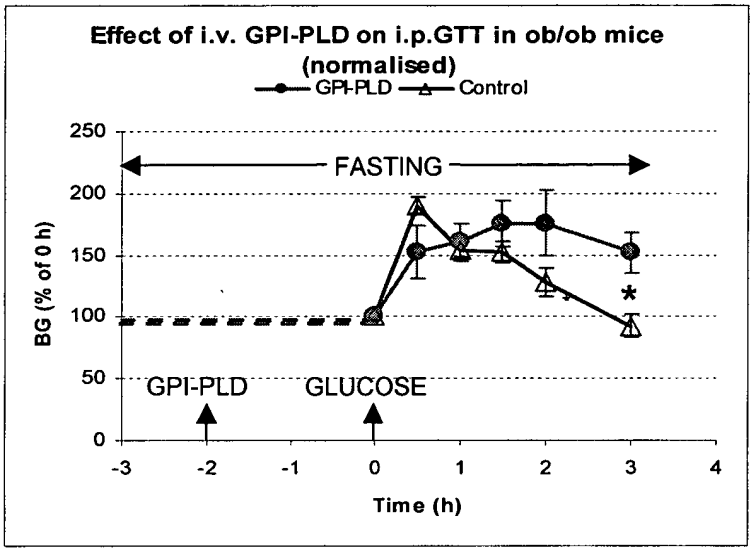
APPENDIX A

Administration of GPI-PLD reduces insulin in diabetic mice



APPENDIX B

Administration of GPI-PLD increases blood glucose in diabetic mice



APPENDIX C

Name: Thomas W. Rademacher

National Status: British Resident/U.S. Citizen

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Current Appointment

Professor of Molecular Medicine, Head - Molecular Medicine Unit
Department of Molecular Pathology
University College London Medical School
Windeyer Building
46 Cleveland St.
London
W1P 6DB

Higher Education

1968-72	University of Wisconsin Madison - **B.Sc.**	Biochemistry cum laude - on "Isolation, purification and characterisation of an iron sulfur metallo protein from the anaerobe Clostridium Pasteurianum"
1972-76	University of Wisconsin Medical School - **M.D.**	National Medical Board Certificate
1976-80	University of Wisconsin Madison - **Ph.D** Biochemistry	Thesis on "The Role of Copper in Murine Lymphocyte Blastogenesis in vitro"
1985	Exeter College, University of Oxford **M.A.** (status)	

Previous Appointments

1971-72	National Science Foundation Undergraduate Research Fellowship. Madison Wisconsin. Supervisor Dr. W. H. Orme-Johnson, Institute for Enzyme Research.
1973-74	Clinical Oncology Research Honours Fellowship, Supervisor, Dr. R. Bleier, Department of Neurophysiology, University of Wisconsin Medical School.
1976	Clinical Preceptorship, University Hospital, Madison Wisconsin, and Woodruff Memorial Hospital, Woodruff Wisconsin.
1976-80	Teaching Assistant, Department of Biochemistry, University of Wisconsin - Madison.
1975-76	National Institute of Health Medical Scientist Predoctoral Fellowship. Supervisor, Dr. W.H. Orme-Johnson. Department of Biochemistry, University of Wisconsin - Madison.
1976-79	National Institute of Health Medical Scientist Postdoctoral Fellowship, Supervisor, Dr. W.H. Orme-Johnson, Department of Biochemistry, University of Wisconsin - Madison and Department of Chemistry Massachusetts Institute of Technology, Cambridge, Massachusetts.
1980	North Atlantic Treaty Organisation International Fellowship (USA) with Dr. R.A. Dwek working on "A Magnetic Resonance Approach to the Structural Basis of Antibody Specificity, Diversity and Effect" Department of Biochemistry, University of Oxford, Oxford, England.
1980	Medical Research Council Fellow - Recognition in Immune Response, October 1980 - April 1981
1980-82	Fellow of Institute of Medicine and Mathematics (USA). Department of Biochemistry, University of Oxford, Oxford, England.
1982	Wellcome Research Fellow - "Immunoglobulins as Glycoproteins" Department of Biochemistry, Oxford.
1982-83	Fellow of Institute of Medicine and Mathematics (USA). Department of Biochemistry, University of Oxford, Oxford, England.
1983-84	Lecturer, Biochemistry, Exeter College, Oxford.
1983-88	Monsanto Senior Research Fellow ,Department of Biochemistry, University of Oxford, England.
1988-91	Director, Clinical and Research, Oxford Glycobiology Unit
1991-93	Senior Research Fellow, Oxford Glycobiology Institute.
1993-94	Senior Clinical Lecture, Dept. of Molecular Pathology, University College London Medical School.
1994-	Professor of Molecular Medicine and Head-Molecular Medicine Unit, University College London Medical School. Senior

Postgraduate Tutor and Head of Admissions Dept. of Molecular Pathology.

Major Research Area(s)

Rheumatology/Immunology/Diabetes/Asthma/Glycobiology/Growthfactors/Cell signalling

Major Research Achievements

Rheumatoid Arthritis.
Association of adult rheumatoid arthritis with changes in the glycosylation pattern of antibodies. *Correlation of glycosylation changes of antibodies with clinical score in juvenile arthritis. * Changes in antibody glycosylation during pregnancy and the relevance to remission of arthritis. *Changes with disease in the glycosylation of antibodies restricted to Crohn's disease, tuberculosis and rheumatoid arthritis. * Changes in glycosylation of antibodies with age. * First description of oligosaccharides in the Fab fragment of antibodies.

Glycobiology.
Description of basic concepts and principles; definition of glycoforms and glycotypes.

Oligosaccharide Sequencing technology.
First rational approach to automated micro sequencing. *Establishment of enzyme bank of oligosaccharide sequencing.*Description of dry phase enzyme method. *Synthesis of methylation standards for GC-mass spectroscopy. * Use of hydrazine to release oligosaccharides intact and quantitatively. * Optimization of reduction conditions.

Characteristics of N-glycosylation.
Description of glycoforms and demonstration of site specific and cell specific N-glycosylation in Thy-1 and tissue plasminogen activator (t-PA). * Relationship of t-PA glycoforms to biological activity.

Oligosaccharide Structure from NMR.
The first solution conformation of an N-linked oligosaccharide and the first description of secondary structure in N-linked oligosaccharides.

Lipid Anchors.
First description of the structures of glycan lipid anchors. *Variable surface glycoprotein Trypanosoma brucei * Lipophosphoglycan (LPG) from Leishmania. *Thy-1 from rat brain.

Parasitology.
Characterisation of glycosylation patterns. * GP63, major surface glycoprotein from Leishmania mexicana amazonsis, * Major carbohydrate fragment of Leishmania donovani lipophosphoglycan. Trypanosoma brucei-type-1 VSG.

Pregnancy.
Identification of an immunosuppresive agent from placental glycocalyx. Description of glycogen accumulation in pre-eclampsia.

Anti-viral Agents.
Demonstration that amino sugars are potential anti HIV agents.

Neural cell-adhesion molecules.
First evidence for expression of O-linked glycosylation.

Plants.
First characterisation of a fucose/xylose substituted oligosaccharide in plant lectins.

Oligosaccharide derivitization.
First successful application of aqueous chemistry for preparing glycyl derivatives of oligosaccharides.

Diabetes.
First partial structures of the insulin second messenger. Description of the pathogenesis of syndrome X in diabetes. Discovery of manganese and zinc co-factors as insulin second messengers.

Pre-eclampsia.
Description of altered release of insulin second messengers on placenta leading to glycogen accumulation.

Hypertension.
Description of manganese co-factor which bind nitric oxide.

Tuberculosis.
Description of phosphoglycokines in mycobacteria which mimic mammalian insulin second messengers.

Malaria.
Description of phosphoglycokines in malaria which mimic mammalian insulin second messengers.

Editorial Boards
1988 - Editor, Advances in Glycobiology.

Scientific Research Groups
Oxford Oligosaccharide Group
Oxford Glycobiology Group
Royal Society of Medicine

Industrial Boards

Oxford GlycoSystems	1987 -1996
Lascaux Pharmaceuticals	1995 -
Rodaris Pharmaceuticals Ltd	1996 – 2001
Midatech Ltd	2000 -
Sylus Pharmaceuticals Ltd	2002 –
Vacsys Ltd	2002 -

Consultancies

Monsanto Co	1984 -1992
Oxford GlycoSciences Group Plc	1987 -1991
INSMED Pharmaceuticals	1994 -1995
Mallinkrodt Medical	1995
Oxford GlycoSciences Group Plc	1996

Companies Founded

Oxford GlycoSciences Plc	1987
Rodaris Pharmaceuticals Ltd	1996
Lascaux Pharmaceuticals Ltd	1996
Midatech Ltd	2000
Sylus Pharmaceuticals	2002
Vacsys Ltd	2002

Thomas Rademacher:

Research Publications (1980-Present)

1. **The C1q Receptor Site on Immunoglobulin G.** D.R. Burton, J. Boyd, A.D. Brampton, S.B. Easterbrook-Smith, E.J. Emanuel, J. Novotny, T.W. Rademacher, M.R. von Schravendijk, M.J.E. Sternberg and R.A. Dwek (1980) *Nature 288, 338-344.*

2. **Solution conformation of the biantennary N-linked oligosaccharide of human serotransferrin using ^{1}H NMR nuclear overhauser effect measurements.** S.W. Homans, R.A. Dwek, D.L. Fernandes and T.W. Rademacher (1982) *FEBS Lett. 150, 503-506.*

3. **Structural, functional and conformational analysis of immunoglobulin G-derived asparagine-linked oligosaccharides.** T.W. Rademacher and R.A. Dwek (1983) *Progress in Immunology, vol. V, 95-112.*

4. **Structural and conformational analysis of immunoglobulin-derived N-linked oligosaccharides.** T.W. Rademacher, S.W. Homans, D.L. Fernandes, R.A. Dwek, T. Mizuochi, T. Taniguchi and A. Kobata (1983) *Biochem. Society Transactions 11, 132-134.*

5. **Solution conformation of biantennary complex type oligosaccharides: Determination of major conformers about the glycosidic linkages.** S.W. Homans, R.A. Dwek, D.L. Fernandes and T.W. Rademacher (1983) *FEBS Lett. 164, 231-235.*

6. **The use of two-dimensional correlated spectroscopy to obtain new assignments in the high-resolution ^{1}H nuclear magnetic resonance spectrum of the biantennary complex oligosaccharide isolated from human serum transferrin by hydrazinolysis.** S.W. Homans, R.A. Dwek, D.L. Fernandes and T.W. Rademacher (1983) *Biochimica et Biophysica Acta, 760, 256-261.*

7. **The analysis of coupling networks in a complex oligosaccharide mixture derived from the Fc region of rabbit immunoglobulin G using ^{1}H-^{1}H correlated NMR spectroscopy combined with double quantum NMR spectroscopy.** S.W. Homans, R.A. Dwek, D.L. Fernandes and T.W. Rademacher (1984) *Biochimica et Biophysica Acta, 798, 78-83.*

8. **Structure-function relationship in immunoglobulins.** R.A. Dwek, B.J. Sutton, S.J. Perkins and T.W. Rademacher (1984) in Molecular Variants of Protein - Biosynthesis and Clinical Relevance - ed. *P.N. Campbell and C. Phelps. Biochem. Soc. Symposium 49, 123-136.*

9. **Multiple-step relayed correlation spectroscopy: Sequential resonance assignments in oligosaccharides.** S.W. Homans, R.A. Dwek, D.L. Fernandes and T.W. Rademacher (1984) *Proc. Natl. Acad. Sci. 81, 6286-6289.*

10. **Immunoglobulin G as a glycoprotein.** T.W. Rademacher, S.W. Homans, R.B. Parekh and R.A. Dwek (1985) Genes and Proteins in Immunity - in honour of Professor R.R. Porter - *Biochem. Soc. Symp. No: 51, 131-149 (ed. J. Jay, M.A. Kerr, A.F. Williams and K.B.M. Reid).*

11. **Effector functions of a monoclonal aglycosylated Mouse IgG2a: Binding and activation of complement component C1 and interaction with human monocyte Fc receptor.** R.J. Leatherbarrow, T.W. Rademacher, R.A. Dwek, J.M. Woof, A. Clark, D.R. Burton, N. Richardson and A. Feinstein (1985) *Molecular Immunology, 22, 407-415.*

12. **Association of rheumatoid arthritis and primary osteoarthritis with changes in the glycosylation pattern of total serum IgG.** R.B. Parekh, R.A. Dwek, B.J. Sutton, D.L. Fernandes, A. Leung, D. Stanworth, T.W. Rademacher, T. Mizuochi, T. Taniguchi, K. Matsuta, F. Takeuchi, Y. Nagano, T. Miyamoto and A. Kobata (1985) *Nature 316, 452-457.*

13. **Structures of the sugar chains of rabbit immunoglobulin G: Occurrence of asparagine-linked sugar chains in Fab fragment.** T. Taniguchi, T. Mizuochi, M. Beale, R.A. Dwek, T.W. Rademacher and A. Kobata (1985) *Biochemistry. 24, 5551-5557.*

14. **Conformational transitions in N-linked oligosaccharides.** S.W. Homans, R.A. Dwek, J. Boyd, M. Mahmoudian, W.G. Richards and T.W. Rademacher (1986) *Biochemistry 25, 6342-6350.*

15. **Synthesis of 2-Acetamido-1,5-imino-1,2,5-trideoxy-D-mannitol and of 2-Acetamido-1,5-imino-1,2,5-trideoxy-D-glucitol, a potent and specific inhibitor of a number of ß-N-Acetylglucosamindases**. G.W.J. Fleet, P.W. Smith, R.J. Nash, L.E. Fellows, R.B. Parekh and T.W. Rademacher. (1986) *Chemistry Letters 1051-1054.*

16. **A method for the rapid assignment of ^{1}H NMR spectra of oligosaccharides using homonuclear Hartmann-Hahn spectroscopy.** S.W. Homans, R.A. Dwek, J. Boyd, N. Soffe and T.W. Rademacher (1987) *Proc. Natl. Acad. Sci. USA 84, 1202-1205.*

17. **Tissue-specific N-glycosylation, site-specific oligosaccharide patterns and lentil lectin recognition of rat Thy-1.** R.B. Parekh, A.G.C. Tse, R.A. Dwek, A.F. Williams and T.W. Rademacher (1987) *EMBO J 6, 1233-1244.*

18. **The β2-D-xylose and α3-L-fucose substituted N-linked oligosaccharides from *Erythrina cristagalli* lectin. Isolation, characterization and comparison with other legume lectins.** D. Ashford, R.A. Dwek, J.K. Welply, S. Amatayakul, S.W. Homans, H.

Lis, G.N. Taylor, N. Sharon and T.W. Rademacher (1987) *Eur. J. Biochem. 166, 311-320.*

19. **Structural studies on the glycophospholipid membrane anchor of Trypanosoma brucei variant surface glycoprotein.** M.A.J. Ferguson, R.A. Dwek, S.W. Homans and T.W. Rademacher (1987. In: *NATO/ASI. vol. H11 Host-Parasite Cellular and Molecular Interaction in Protozoal Infections, p.p. 19-28 (eds. K-P. Chang and D. Snary)*

20. **Oligosaccharide conformation**. C.J. Edge, S.W. Homans, R.A. Dwek and T.W. Rademacher (1987) *Fourth European Seminar and Exhibition on Computer-Aided Molecular Design, 1987, IBC Technical Services Ltd.*

21. **Identification of phosphorylated 3-deoxy-*manno*-octulosonic Acid as a component of *Haemophilus influenzae* lipopolysaccharide.** S.E. Zamze, M.A.J. Ferguson, E.R. Moxon, R.A. Dwek and T.W. Rademacher (1987) *Biochem. J. 245, 583-587.*

22. **Tertiary structure in N-linked oligosaccharides.** S.W. Homans, R.A. Dwek and T.W. Rademacher (1987) *Biochemistry 26, 6553-6560.*

23. **Structure and dynamics in oligomannose-type oligosaccharides.** S.W. Homans, A. Pastore, R.A. Dwek and T.W. Rademacher (1987) *Biochemistry 26, 6649-6655.*

24. **Solution conformations of N-linked oligosaccharides.** S.W. Homans, R.A. Dwek. and T.W. Rademacher (1987) *Biochemistry 26, 6571-6578.*

25. **Structure of the major carbohydrate fragment of the *Leishmania donovani* lipophosphoglycan.** S.J. Turco, S.R. Hull, P.A. Orlandi, Jr., S.D. Shepherd, S.W. Homans, R.A. Dwek and T.W. Rademacher (1987) *Biochemistry 26, 6233-6238.*

26. **The glycosylphosphatidylinositol membrane anchor of *Trypanosoma brucei* variant surface glycoprotein.** M.A.J. Ferguson, S.W. Homans, R.A. Dwek and T.W. Rademacher (1988) *Biochemical Transactions 16, 265-268.*

27. **Glycobiology.** T.W. Rademacher, R.B. Parekh and R.A. Dwek (1988) *Ann. Rev. Biochem. 57, 785-838.*

28. **Rheumatoid arthritis as a glycosylation disorder.** R.B. Parekh, R.A. Dwek and T.W. Rademacher (1988) *British Journal of Rheumatology 27 (suppl 11) 162-169.*

29. **The role of IgG glycoforms in the pathogenesis of rheumatoid arthritis.** T.W. Rademacher, R.B. Parekh, R.A. Dwek, D. Isenberg, G. Rook, J.S. Axford and I. Roitt. (1988). *Springer Seminars in Immunopathology 10, 231-249.*

30. **Changes in carbohydrate structure of IgG in rheumatoid arthritis.** I.M. Roitt, R.A. Dwek, R.B. Parekh, T.W. Rademacher, A. Alavi, J.S. Axford, K.B. Bodman, A. Bond, A. Cooke,

F.C. Hay, D.A. Isenberg, P.M. Lydyard, L. MacKenzie, G. Rook, M. Smith, N. Sumar, (1988). *Recenti Progressi in Medicine, 79, 314-317.*

31. **The Thy-1 glycoprotein: a three-dimensional model.** S.J. Perkins, A.F. Williams, T.W. Rademacher and R.A. Dwek. (1988) *TIBS 13, 302-303.*

32. **The role of oligosaccharides in modifying protein function.** T.W. Rademacher and R.A. Dwek. (1988). *CIBA Foundation Symposia, p.p. 241-256.*

33. **Age-related galactoyslation of N-linked oligosaccharides of human serum IgG.** R.B. Parekh, I.M. Roitt, D.A. Isenberg, R.A. Dwek, and T.W. Rademacher (1988) *J. Exp. Med. 167, 1731-1736.*

34. **Galactosylation of IgG associated oligosaccharides: Reduction in patients with adult and juvenile onset rheumatoid arthritis and relation to disease activity.** R.B. Parekh, D.A. Isenberg, B.M. Ansell, I.M. Roitt, R.A. Dwek and T.W. Rademacher (1988) *Lancet i, 966-969.*

35. **Glycosyl-phosphatidylinositol moiety that anchors *Trypanosoma brucei* variant surface glycoprotein to the membrane.** M.A. Ferguson, S.W. Homans, R.A. Dwek and T.W. Rademacher (1988) *Science 239, 753-759.*

36. **A Monoclonal Antibody raised by immunising mice with group A streptococci binds to agalactosyl IgG from rheumatoid arthritis.** G.A.W. Rook, J. Steele, and T.W. Rademacher. (1988) *Ann. Rheum. Dis. 47, 247-250.*

37. **Identification of a monoclonal antibody to abscission tissue that recognises xylose/fucose-containing N-linked oligosaccharides from higher plants.** M.T. McManus, J. McKeating, D.S. Secher, D.J. Osborne, D. Ashford, R.A. Dwek and T.W. Rademacher (1988) *Planta 175, 506-512.*

38. **δ-Lactams: Synthesis from D-glucose, and preliminary evaluation as a fucosidase inhibitor of L-Fuconic-δ-lactam.** G.W. Fleet, N.G. Ramsden, R.A. Dwek, T.W. Rademacher, L.E. Fellows, R.J. Nash, D.St.C. Green and B. Winchester (1988) *J. Chem. Soc. Chem. Commun. 1779, 482-485.*

39. **Complete structure of the glycosylphosphatidylinositol membrane anchor of rat brain Thy-1 glycoprotein.** S.W. Homans, M.A.J. Ferguson, R.A. Dwek, T.W. Rademacher, R. Anand and A.F. Williams (1988) *Nature 333, 269-272.*

40. **Characterisation of the cross-reacting determinant (CRD) of the glycosyl-phosphatidylinositol membrane anchor of *Trypanosoma brucei* variant surface glycoprotein.** S.E. Zamze, M.A.J. Ferguson, R. Collins, R.A. Dwek and T.W. Rademacher (1988) *Eur. J. Biochem 176, 527-534.*

41. **Galactose residues in chronic inflammatory disease.** J.S. Axford, L. Mackenzie, P.M. Lydyard, F.C. Hay, D.A. Isenberg, I.M. Roitt, G. Rook, T.W. Rademacher, R.B. Parekh and R.A. Dwek. (1988) *Lancet 418.*

42. **The role of antigen in autoimmune responses with special reference to changes in carbohydrate structure of IgG in rheumatoid arthritis.** Roitt, I.M., Dwek, R.A., Parekh, R.B., Rademacher, T.W., Alavi, A., Axford, J.S., Bodman, K.B., Bond, A., Cooke, A., Hay, F.C., Isenberg, D.A., Lydyard, P.M., Mackenzie, L., Rook, G., Smith, M. and Sumar, N. (1988) *J. Autoimmunity 1, 499-506.*

43. **Inhibition of HIV replication by amino-sugar derivatives.** G.W.J. Fleet, A. Karpas, R.A. Dwek, L.E. Fellows, A.S. Tyms, S. Petursson, S.K. Namgoong, N.G. Ramsden, P.W. Smith, J.C. Son, F. Wilson, D.R. Witty, G.S. Jacob and T.W. Rademacher (1988) *FEBS Lett. 237, 128-132.*

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